San Francisco Estuary Project: A Climate Ready Estuaries Pilot

The EPA's Climate Ready Estuaries (CRE) program is working with the San Francisco Estuary Project (SFEP) and the EPA's Office of Research and Development's Global Change Research Program, on a pilot project to assess key vulnerabilities of the San Francisco estuary system to climate change. The assessment will take advantage of significant work that is already underway in the region, particularly on sea level rise, to support further analysis of climate drivers and ecosystem effects.

A major objective under the CRE pilot program is the development of a SFEP climate change Adaptation Plan. SFEP's Adaptation Plan will be informed by the planning process for the California State Climate Adaptation Strategy (coastal sector), as well as the rich array of other climate adaptation activities ongoing in California. The long term nature of climate change, the uncertainty of future conditions and the early stages of research on adaptation necessitate that adaptation planning be an iterative process; strategies based on the best available science can be implemented today, with an expectation that they will be improved and supplemented as new information from vulnerability assessments becomes available.

Pilot project components may include:

- *Examining management goals, ecosystem components, and climate drivers*
  - ⇒ Evaluation of priority management goals, drawing from the Comprehensive Conservation and Management Plan.
  - ⇒ Identification of key ecosystem components and processes upon which goals depend.
  - ⇒ Conceptual modeling of likely pathways by which climate drivers may impact ecosystem components and processes and thus management goals.
- *Summarizing observed climate change impacts*
  - ⇒ Identification of baseline conditions based on previous efforts by the NEP and its partners, an analysis of monitoring data sources and a literature search.
  - ⇒ Characterization of observed variation from that baseline, differentiating between climate driven trends and natural variability where possible.
- *Projecting climate change impacts*
  - ⇒ Selection of the appropriate models and tools to project likely changes to key ecosystem components and processes, with an emphasis on utilizing existing models.
  - ⇒ Development of long term projections for key ecosystem components and processes.
- *Assessing vulnerability of management goals to climate change*
  - ⇒ Assessment of how climate change stressors are likely to affect key ecosystem components and processes.
  - ⇒ Assessment of the cumulative impacts and interactions among multiple stressors and among multiple ecosystem components and processes.
  - ⇒ Synthesis report on the potential effects of the above on SFEP's ability to attain key management goals.
- *Adaptation Planning*
  - ⇒ Identification of adaptation options appropriate to local vulnerabilities and management goals.
  - ⇒ Incorporation of expert and stakeholder input on feasibility, appropriate stage of implementation and prioritization of adaptation options.
  - ⇒ Development of a draft SFEP climate change Adaptation Plan.

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